West Virginia
2007 Annual Report

Introduction

The United States Environmental Protection Agency (US EPA) granted the State of West Virginia the authority to implement the Safe Drinking Water Act (SDWA) in 1976. The West Virginia Department of Health and Human Resources (WVDHHR)/ Bureau for Public Health/ Office of Environmental Health Services/ Division of Environmental Engineering, located in Charleston, West Virginia, provides program oversight through five district offices located state-wide (see Appendix D).

Annual Compliance Report

The WV Bureau for Public Health (WVBPH) collects information of all reported public water system program data and submits it to the US EPA on a quarterly basis. This includes inventory information, Maximum Contaminant Level (MCL) violations, Monitoring/Reporting (M/R) violations, and Treatment Technique (TT) violations. The annual report compiles the violations into the aforementioned categories and presents them in Appendix B.

Definitions

Public Water System - A public water system (PWS) is defined by the SDWA as any water supply or system that regularly supplies or offers to supply water for human consumption through pipes or other constructed conveyances, if serving at least an average of twenty-five individuals per day for at least sixty days per year. Systems are classified as “community” (towns, cities or mobile home parks), “non-community non-transient” (factories or schools) or “transient non-community” (parks, restaurants).

Maximum Contaminant Level (MCL) - Under the SDWA, national limits establish allowable contaminant levels in the drinking water to ensure that it is safe for human consumption. Appendix C identifies specific contaminant levels for the regulated analytes.

Treatment Techniques (TT) - Some regulations require specific treatment techniques, instead of MCL levels, to control contaminants. Filtration requirements are examples of methods to control viruses, bacteria, cysts and turbidity.

Monitoring/Reporting (M/R) – PWS must perform monitoring to verify that the drinking water meets SDWA standards. An M/R violation occurs if the PWS fails to monitor or report test results during the required monitoring period.

Significant (Major) Monitoring Violations - A major monitoring violation (with the exception of the Surface Water Treatment Rule) occurs when a required test result or report has not been received within ten (10) days from the end of a compliance period (a minor violation occurs when an incomplete number of test results are submitted within the proper time frame). A major Surface Water Treatment Rule M/R occurs when less than 10 percent of the required samples test results are reported during a compliance period.

Drinking Water Program Initiatives

In addition to enforcing the federally mandated MCLs, treatment techniques and monitoring requirements, the West Virginia Bureau for Public Health (WVBPH) has developed additional programs to assist and assure that the drinking water distributed by the state's approximately 506 community and 600 non-community water systems (as of 5/28/08) meet the requirements of SDWA. These include:

Operator Training and Certification-

The Operator Certification Program in West Virginia is one of the oldest in the nation and currently requires all public water system (PWS) operators to complete education, training and certification requirements covering basic knowledge of water treatment concepts and regulations. The US EPA approved the WV Operator Certification Program on February 20, 2002. Title 64, Legislative Rule, Bureau for Public Health, Series 4, *Public Water Systems Operator Regulations* (effective April 18, 2007) provides the basis for program direction and enforcement authority to the Certification & Training (C&T) section of the Environmental Engineering Division. C&T works closely with operators, PWS's and other state drinking water programs to ensure adequate operator coverage at each public water system. Sanitary surveys, field inspections, and routine reporting assist with compliance and enforcement. Potential violations can also be determined through queries of the SDWIS/STATE and Safe Water Operator Certification System (SWOCS) databases. C&T can suspend or revoke operator certifications if minimum requirements are not met.

WV recognizes six classes of public water systems; 1D, WD, and Class I-IV. Classification is a descriptive definition based on source, population served, and treatment requirements. The WD classification is new and refers to a PWS that obtains all of its water from another PWS, and is not owned or operated by the supplying PWS. Prior to the new regulation, WD systems were commonly referred to as purchase systems. There are seven classes of certified operators; 1D, WD, OIT, and Class I-IV. The general education, experience and training requirements for each operator certification are as follows.

Certification	Education	Experience	CEHs/Year
1D	8th Grade, 1 day class, pass exam	None	None
OIT	On-the-job experience under supervision of Chief Operator	None	6 and attempt WD or Class I exam
WD	12th Grade or GED, approved class, pass exam	1,000 hours	6
I	12th Grade or GED, 1-week Class I training, pass exam	2,000 hours	12
II	12th Grade or GED, 1-week Class II training, pass exam	6,000 hours	24
III	12th Grade or GED, 90 CEUs, pass exam	10,000 hours	24
IV	12th Grade or GED, 180 CEUs, pass exam	12,000 hours	24

All operator certifications require renewal every 2 years. There are no fees for initial operator certification or renewal. In most cases, renewal requires completion of continuing education hours (CEHs) to promote continued learning. All PWS's, excluding 1D systems, must designate a Chief Operator. The statistics below compare the number of operators trained and certified for the calendar years 2006 and 2007, based on the OEHS monthly report.

Subject	Year 2006	Year 2007
Operators Trained	382	584
Operators Certified	1,151	1,121

To improve operator training and increase exam relevancy, C&T "chairs" the Drinking Water Exam Review Committee (comprised of State regulators, educators, and current Class IV operators). This committee has validated at least 2 versions of each operator exam and continues to review and revise the exams to ensure that baseline knowledge is established for each certification level. All exam questions are based on what operators indicate they "need to know" for the job.

To improve communication of operator related information, C&T has a website (http://www.wvdhhr.org/oehs/eed/swap/training&certification/) which contains forms, certification information, training and testing schedules, study materials, regulations, and continuing education opportunities. C&T also publishes a regularly-scheduled newsletter called *Drips and Drops*, which is distributed to all operators via mail and posted on the website to inform operators of up-coming water regulations and events. C&T provides an exhibit and program representatives at operator-related events such as WV Expo, WV Rural Water Association Annual Conference, and Public Health Day.

To facilitate operator training, the C&T is exploring alternative means of instruction including on-line training and cooperation with educational partners (i.e., vocational technical schools and community colleges).

Compliance and Enforcement – This Section is made up of the Central Office located in Charleston, West Virginia, and five (5) District Offices strategically located throughout the State. They provide technical help to PWS operators (compliance) while issuing violations (enforcement) to return recalcitrant systems to compliance.

Central Office - The Central Office focuses primarily on returning water systems to compliance with Federal and State Drinking Water regulations. Enforcement tools presently used include violation letters, Administrative Orders w/o penalty, Food Permit Suspension Requests (for those water systems with food permits), and Food Permit Suspension Warning Letters.

The Food Permit Suspension (FS) Request, developed by the Central Office in early 2005 and implemented in conjunction with county sanitarians, suspends the food (and accompanying liquor license) of a PWS until it returns to compliance for all outstanding violations. It has been highly effective in returning to compliance water systems that have been chronic violators.

The Food Permit Suspension Warning (FW) Letter is a recent development that informally warns the water system of an impending Food Permit suspension if it does not quickly comply. It has the advantage of not requiring Upper Management signatures to implement (faster turnaround), does not require action from the County Sanitarian, and does not disrupt the water system's business. So far, the response from the water systems in returning to compliance has been very good.

Of the four (4) FS Requests implemented, all water systems were either deactivated or returned to compliance. Of the twenty-three (23) FW letters issued, seventeen (17) resulted in water systems returning to compliance without further action.

Thirty-six (36) administrative orders (AO's) without penalties were issued against water systems in 2007 as compared to eleven (11) AO's in 2005. Of the thirty-six (36) AO's issued, Twenty (20) systems returned to compliance. Eight (8) systems, with limited management and financial resources, were turned over to Capacity Development for assistance.

Subject	Year 2006	Year 2007
Violation Letters	5537	5861
Administrative Orders w/o Penalty	11	36
Food Permit Suspend Request	20	4
Food Permit Warning Letter	5	23

In addition to the enforcement side, the group encourages PWS compliance by: (1) mailing annual monitoring schedules to them, (2) providing technical assistance on PWS violation, public notice, and testing issues, and (3) mailing letters reminding them that their test results are due.

Please note that the 5537 generated violation letters (found above) differs from the number contained in the 2006 Annual Compliance Report submittal (4340 generated violation letters). The present number (5537) came from the Federal SDWIS data that was frozen on 2/07 while the former number (4340) came from the State SDWIS data that was queried in late 6/07. The differences stem from (1) violation recissions occurring later in the year and (2) EPA's method of carrying over unresolved violations. We are now using (and will continue to use) the Federal SDWIS data sets for consistency.

Sanitary Surveys and Inspections – The five (5) District Offices, located throughout the State, conduct comprehensive sanitary surveys to ascertain PWS compliance with State and Federal Drinking Water Standards.

Community surface and groundwater-under-the-influence water systems are surveyed every three years; community groundwater, purchase, non-community surface water systems, and groundwater-under-the-influence systems are surveyed every five years; and non-community ground and purchase systems are surveyed every ten years.

Annual inspections are conducted to inspect surface water treatment plants, and other site visits are conducted to respond to specific problems and to provide assistance to systems' requests. Disinfection By-Product (DBP) compliance is a prime example of this more hands-on approach.

Upon completion of the inspection or survey, the Engineer outlines his/her findings, conclusions, and recommendations in a report sent to the PWS. State code mandates that the PWS respond to significant sanitary survey deficiencies, in writing within forty-five days from receipt of the report, with an implementation plan (including possible equipment procurement, benchmark schedule, etc) to correct the deficiencies.

Technical Assistance – In addition to inspections, the Engineers, Technicians, and District Sanitarians provide technical assistance regarding water quality, source protection, water treatment, and water distribution issues in an effort to improve PWS compliance. District office locations and their service areas are shown on Appendix D.

The District Offices continued their proactive approach towards compliance by increasing the number of visits to the water systems in all categories listed except for Turbidity Technical Assistance visits. Because of the AWOP program success, it may have allowed the District Offices to focus their resources to other areas, ie, DBP visits.

Subject	Year 2006	Year 2007
Sanitary Surveys	248	288
Annual Site Visits	69	94
DBP Visits (Technical Assistance)	315	360
Turbidity (Technical Assistance)	122	78
Town Council Meetings Attended	30	41

Source Water Assessment and Protection Program (SWAP) – This Program protects West Virginia streams, rivers, lakes, reservoirs, and ground waters (used for public drinking water) from future contamination by providing educational information aimed at reducing potential water contamination. This information is provided to water systems, and to other local groups (i.e., local watershed protection organizations) that are interested in implementing source water and water system protection. SWAP continually assesses new PWS potential contamination, and revisits existing systems when source water changes.

The Wellhead Protection Program, a subset of SWAP, protects against groundwater supply contamination by assisting the PWS in identifying and managing potential sources of contamination within a designated area surrounding drinking water wells. This area is the land area that allows surface water to recharge the underground well aquifer.

The program taps into local and county, state regulatory (i.e., Department of Environmental Protection, and educational (i.e., West Virginia University) resources and expertise to meet its objectives.

The Ground Water Under the Direct Influence (GWUDI) Program, another subset of SWAP, implements monitoring requirements (bacteria tests) to determine which ground water sources are affected by surface water sources, and to designate them as GWUDI sources (GWUDI sources are subject to more extensive monitoring requirements than ground water sources).

The West Virginia Bureau for Public Health had classified one hundred percent of all public groundwater sources in service prior to January 1, 2004. New sources will be tested/classified within eighteen (18) months of being activated.

Infrastructure and Capacity Development Section

The Infrastructure and Capacity Development Section supports PWS compliance with the SDWA through the following groups: (1) Capacity Development, (2) Water System Construction Permitting, (3) Drinking Water Treatment Revolving Fund (DWTRF), and (4) State and Tribal Assistance Grants (STAG).

Capacity Development - The Capacity Development Group supports compliance by: (1) performing PWS capacity development assessments, (2) tracking consumer confidence report (CCR) submittals, (3) providing direct PWS assistance and referring PWS to third party assistance providers, (4) implementing a new PWS capacity development managerial and financial review, (5) conducting on-site assistance visits at systems classified by EPA as significant non-compliers (SNC), and writing articles for various

newspapers and magazines. The SNC systems, being helped by Capacity Development, are generally small water systems with no designated Administrative Contact and very little resources. Usually, a number of governmental agencies, including Capacity Development, coordinate efforts to assist these SNC systems.

The Group performs capacity development assessments (CDAs) and evaluates a water system's technical, managerial, and financial capabilities. The PWS receives a detailed report providing the Group's conclusions and recommendations. Implementing the report recommendations will lead the water system to long term stability and viability. A CDA is mandatory for water systems seeking DWTRF funds. However, the Group will perform the assessment for any PWS asking for this assistance.

Community water systems must complete their Consumer Confidence Report (CCR) annually. The CCR provides their customers drinking water quality information. Water system compliance has been consistent from 2005 to 2007 with 90%, 95%, and 91% compliance rates, respectively.

The Group provides direct PWS assistance and also serves as a clearinghouse, providing shared information and ideas among water systems. Although vacancies caused short staffing throughout the year, one staff person continued focusing primarily on assessment follow-up and assistance. A formal follow-up call and tracking system was initiated, documenting assessed systems' progress addressing recommendations, and offering additional assistance. Follow-up calls and tracking have resulted in additional assistance requests and direct, on-site PWS assistance. Idea sharing has been facilitated through an informal and informative public forum, CAPDEV (**C**apacity **A**ssistance **P**artnership **D**eveloping **E**ssential **V**iability). CAPDEV is a unique PWS gathering and discussion venue. PWS's, attending CAPDEV meetings, network with their drinking water neighbors and are encouraged to pursue Mutual Aid Agreements. Drinking water system technical, managerial, and financial activities are discussed.

All proposed new PWSs are reviewed by the Group. Any proposed PWS meeting EPA's new water system definition must complete *Form EW-100 Addendum to Permit Application to Install, Extend, or Modify a Community or Non-Community Non-transient Public Water System – Capacity Development Requirements (EW-100 Addendum)* and include it with their construction permit application. Through this process, the new PWS must demonstrate adequate managerial and financial capability before a construction permit will be issued.

Water System Construction Permitting Plan Reviews – This Group ensures compliance with Federal and State Water Treatment Construction Design Standards by requiring that new and existing facilities, being modified, obtain a "Permit to Construct" from the WVBPH prior to construction. The number of water construction permits increased slightly from the prior year.

Drinking Water Treatment Revolving Fund (DWTRF) - This Group assists water systems in upgrading their facilities to achieve compliance with the Safe Drinking Water Act. Since its inception through 2007, the DWTRF has funded thirty-six projects, totaling nearly $60 million. From 2006 to 2007, the number of DWTRF loans increased by 1 to a total of 4. During the same period, the amount of loans decreased by $1,000,000 to $5,400,000.

State and Tribal Assistance Grants (STAG) - This Group provides oversight capabilities for the Federal EPA in administering Congressional grants approved for water treatment projects. Due to the congressional controversy regarding earmark projects, no projects were approved in 2007.

Subject	**2005**	**2006**	**2007**
1. CDA's Completed	**28**	**16**	**15**
2. PWS Subject to CCR Rule	**531**	**532**	**503**
2. CCR's Completed	**478**	**504**	**470**
3. Water Permits Approved	**313**	**287**	**300**
4. DWTRF Loans	**5**	**3**	**4**
4. DWTRF Loan $	**5.3 M**	**6.4 M**	**5.4 M**
5. STAG Grants Administered*	**30**	**31**	**31**
5. STAG Grant $ Administered*	**27.6 M**	**28.6 M**	**28.6 M**
6. On-Site Follow-Up Visits from prior CDA's		**5**	**5**
7. Participating water systems in CAPDEV Meetings		**18**	**18**

Note: all data is for calendar year except those marked with *, which are cumulative.

Conclusion

A graphical representation of the Federal Annual Compliance Report data for West Virginia has been generated to visually assist in correlating violations trends with use of various compliance tools. By better understanding the causes of increased/decreased violation generation, effective compliance tools can be emphasized while modifying/discarding non-effective tools. Each of the following graphs is accompanied by an explanation of historical events that may account for the trends.

Graph 1 – Total Violations

Graph 1 shows the overall violation trend for West Virginia. Prior to 2004, the District Offices manually generated violations. The 2000 to 2003 trend indicates that the State has been progressing towards compliance even though it includes the accumulation of old violations from "basket case" water systems (EPA violation accumulation method).

The 2004 jump in violations can be attributed to a confluence of events. These included: (1) the incorporation of SDWIS/automated violations generator (versus the District Office labor-intensive manual method), (2) the addition of the 3-year violations for VOC, SOC, and IOC requirements, and (3) the first year violation generation for the DBP rule.

The 2005 violations decrease was expected with the passing of the 3-year VOC, SOC, and IOC violations. LCR and CCR violation increases (see Graphs 9 and 11 discussion) plus the introduction of PN violations (Graph 12) caused the bump-up in 2006. The resumption of the 3-year violations, addition of the RAD violations (revised rule), and increased PN violations accounted for the 2007 increase.

Graph 2 – VOC Violations

As discussed earlier, the 2004 violation peak is attributed to the use of an automated system and the addition of 3-year violations. The slight violation generation decrease between 2005 and 2007 may indicate progress towards returning systems to compliance.

Graph 3 – SOC Violations
The SOC graph shows the expected increase in 2004 (resumption of 3-year violations) but, rather than decreasing in 2005, violation generation remained level before increasing in 2007 (resumption of 3-year violations). This may be attributed to systems adding violations and returning to compliance at approximately the same rate.

Graph 4 – IOC Violations
The IOC graph shows 2005 and 2007 to be in-line with expectations. The violation increase in 2006 was caused by more systems violating the requirements (119 to 131) in addition to the violations carryover.

Graph 5 – RAD Violations
The revised RAD Rule generally required four (4) quarters of data to be collected between 2005 and 2007. Violations for this requirement began in 2007.

Graph 6 – TCR Violations
Being one of the oldest requirements, the compliance has steadily dropped with each passing year although it appears to have flattened out somewhat in 2007. The violations have probably plateaued on the "basket cases" that have little resources to do testing. These cases have been referred to either EPA for further enforcement action or to the Capacity Development Group for assistance in resource procurement or other means of returning to compliance.

Graph 7 – SWTR Violations
The progressive geometric decrease in SWTR violations (slight increase in 2007) may be attributed to the District Office aggressiveness in introducing the water systems to the AWOP program. They approached each water system and visually showed the operators the turbidity relationship (AWOP software program) between raw water intake and finished water. The District Offices also prepared a turbidity ranking list comparing the individual system to its peers. These actions have resulted in a competition atmosphere among the water systems to try and "top the list".

Graph 8 – IESWTR Violations
See Graph 7 discussion above.

Graph 9 – LCR Violations
The Federal Compliance Report trend for LCR does not parallel the Compliance & Enforcement (C&E) LCR Violations Summary for the same time period. From 2004 to 2007, the Federal Annual Compliance Report documented 211, 37, 216, and 234 violations, respectively. For the same period, C&E generated approximately 100, 35, 28, and 75 violations, respectively. The cause for the dissimilar two data sets, even accounting for EPA's cumulative method, cannot be explained at this time.

Beginning in the 2008 to 2010 period, the number of violations per year is expected to level out due to the revised rule. Although each system on a 3-year monitoring period only needs to test once during that period, the State assigns the specific year that testing shall be performed. By spreading the test requirement equally over the 3-year period, the number of violations incurred should also be spread equally for each year.

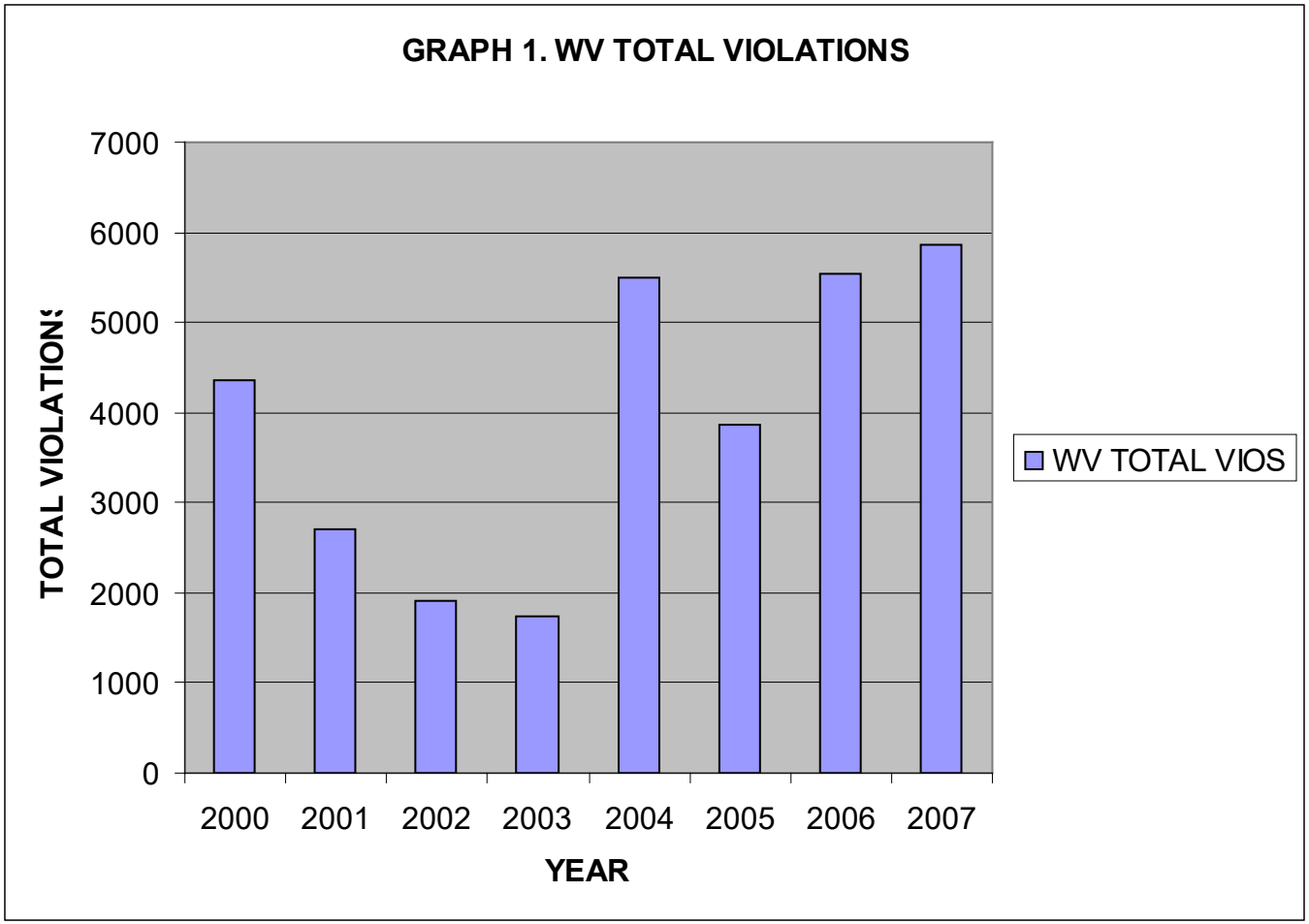
Graph 10 – DBP Violations
The decreasing trend in both the MR and MCL violations may be attributed to the District Office assistance in recommending individual system operational changes and trial-and-error experience gained by the water system operators.

Graph 11 – CCR Violations

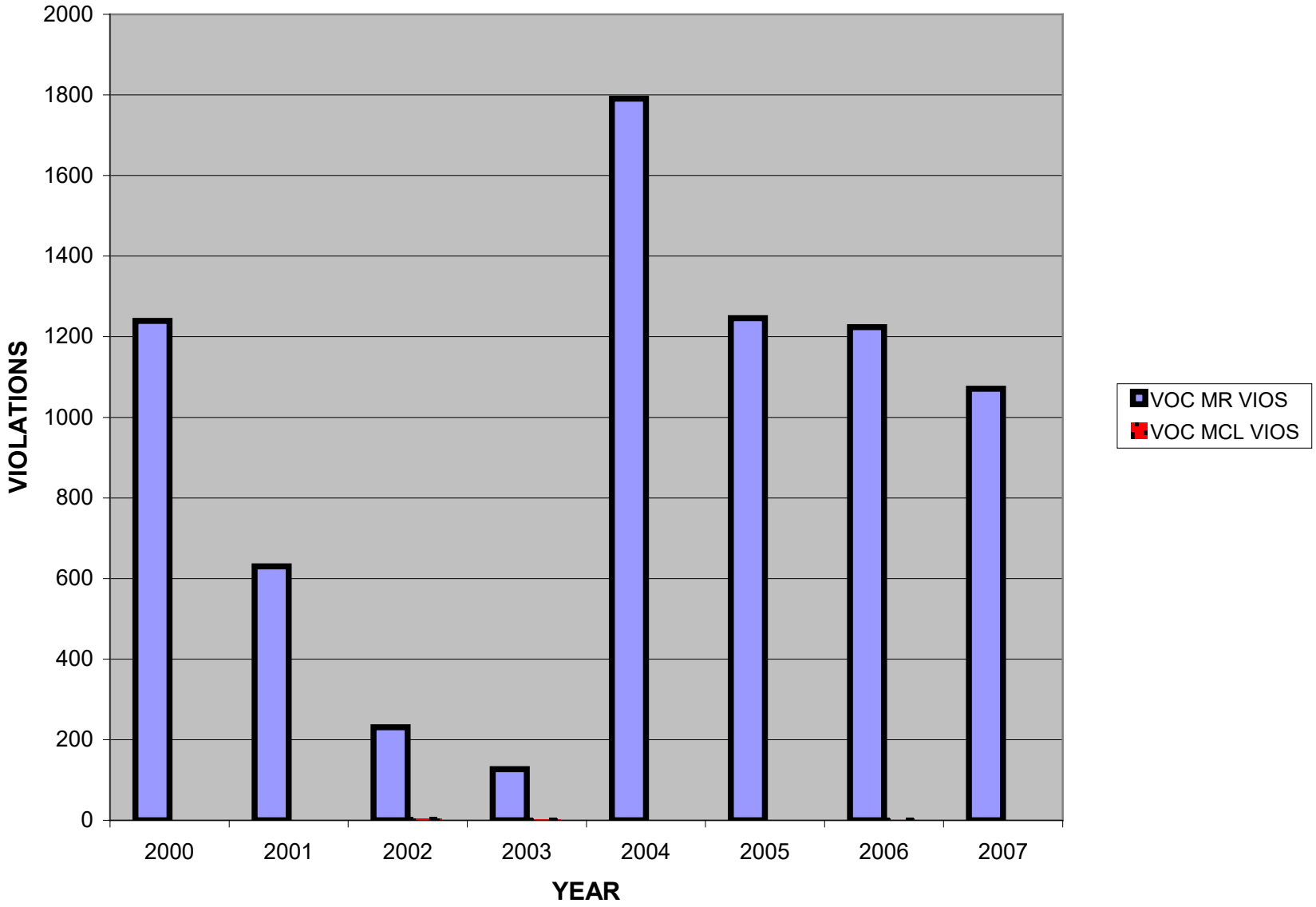
In 2005, the State mailed letters to each water system reminding them that CCR's were due. This appeared to have a significant impact on violations. In 2006, the letter campaign was replaced by a more general call for CCR's through conferences (ie, Rural Water Conference) and newsletters. This did not seem to work very well so the individual mailings were re-implemented in 2007 with better results.

Graph 12 – PN Violations

The 2006 to 2007 increase in PN violations was caused by: (1) the increase of the 2006 violations (5537) over the 2005 violations (3875) and (2) the EPA cumulative method. Note that the Tier 3 PN violations (the bulk of the PN violations) lag the original violations by approximately one (1) year. On a percentage basis, the violations have decreased. The 2006 PN violations constituted about 9% (347/3875) of the 2005 violations generated while the 2007 PN violations constituted 6% (336/5537) of the 2006 violations generated.


GRAPH 1. WV TOTAL VIOLATIONS
7000
6000
5000
4000
3000
2000
1000
0
TOTAL VIOLATIONS
2000
2001
2002
2003
2004
2005
2006
2007
YEAR
WV TOTAL VIOS

GRAPH 2. WV VOC VIOLATIONS



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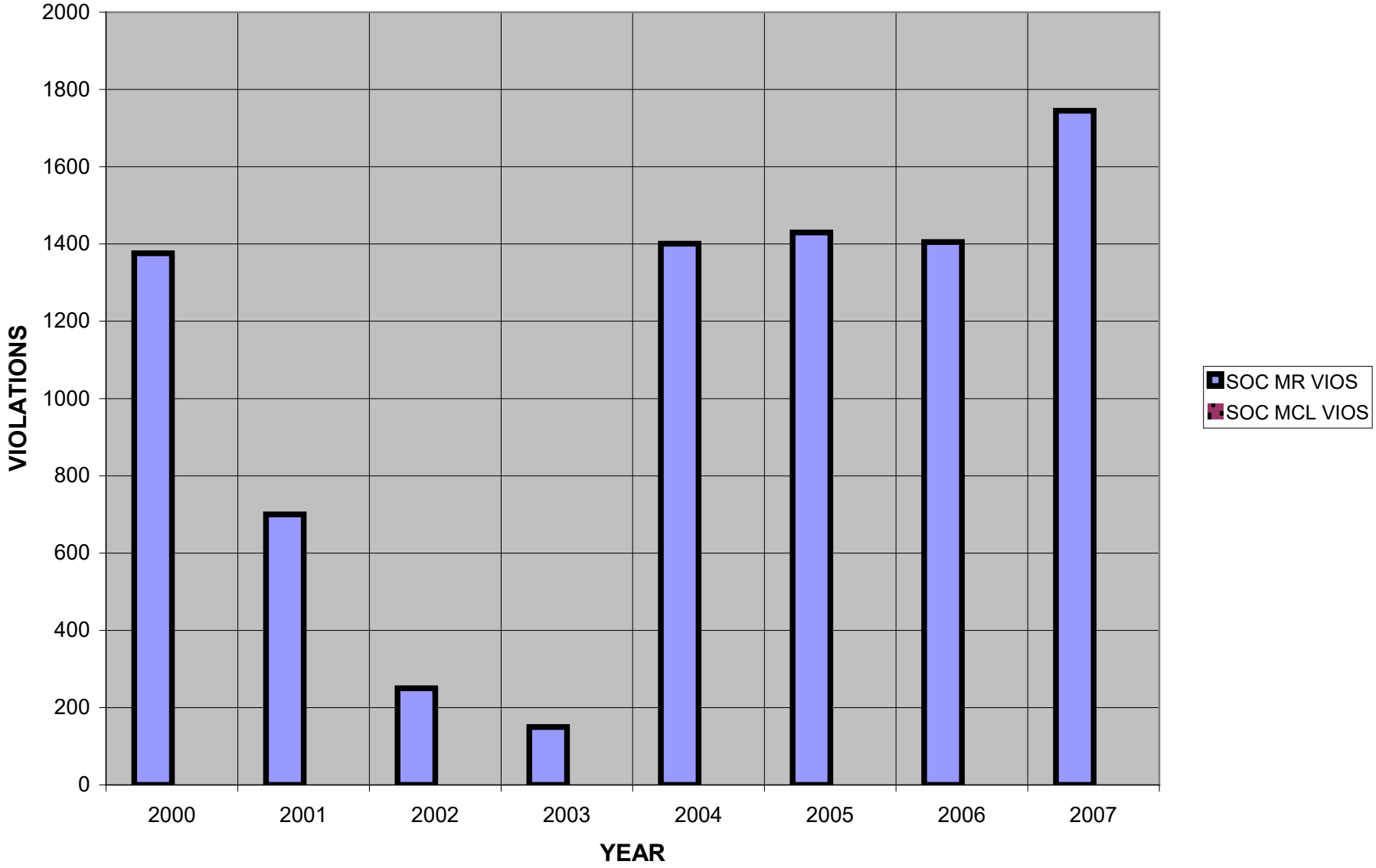
GRAPH 3. WV SOC VIOLATIONS



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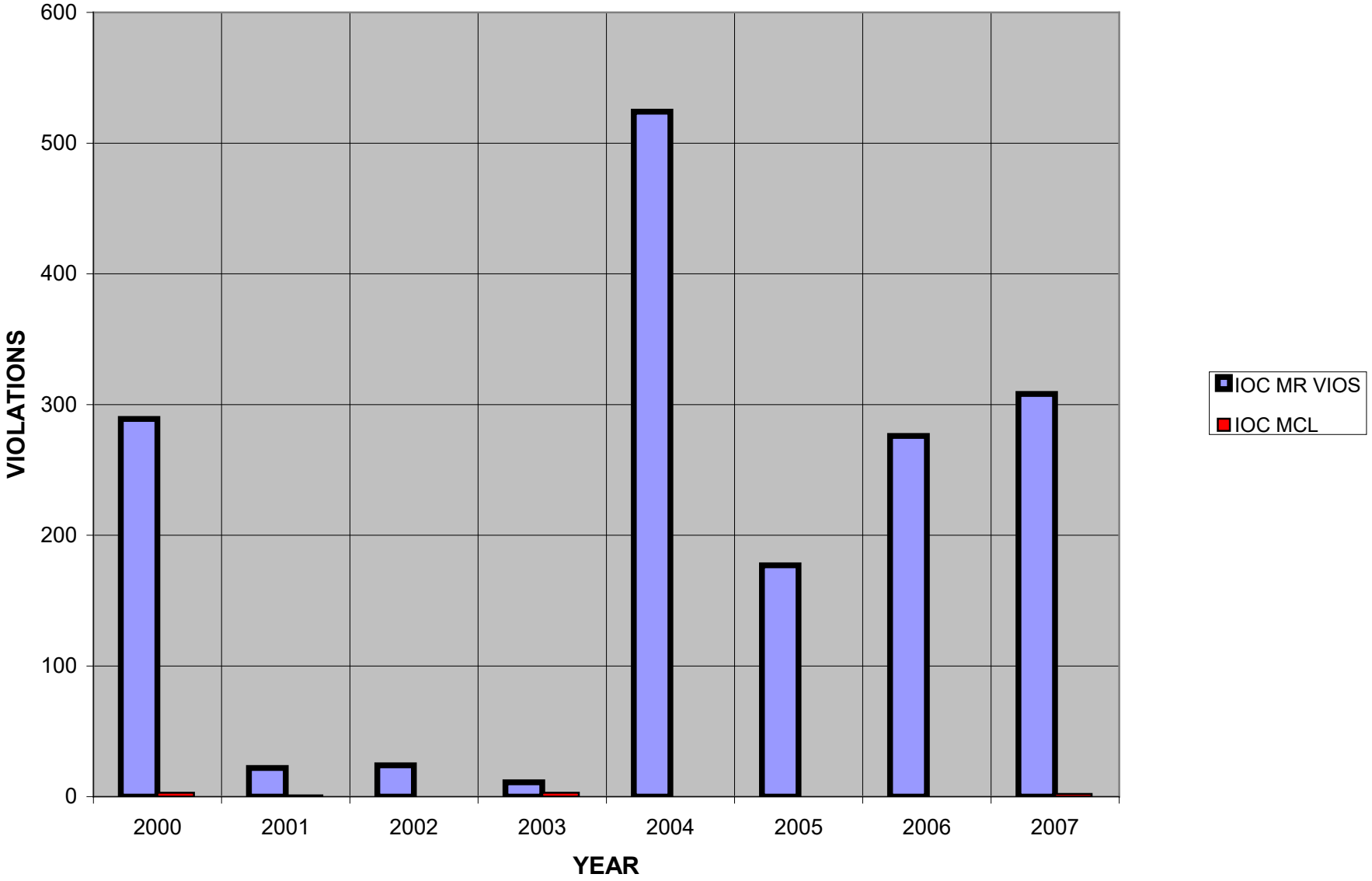
GRAPH 4. WV IOC VIOLATIONS



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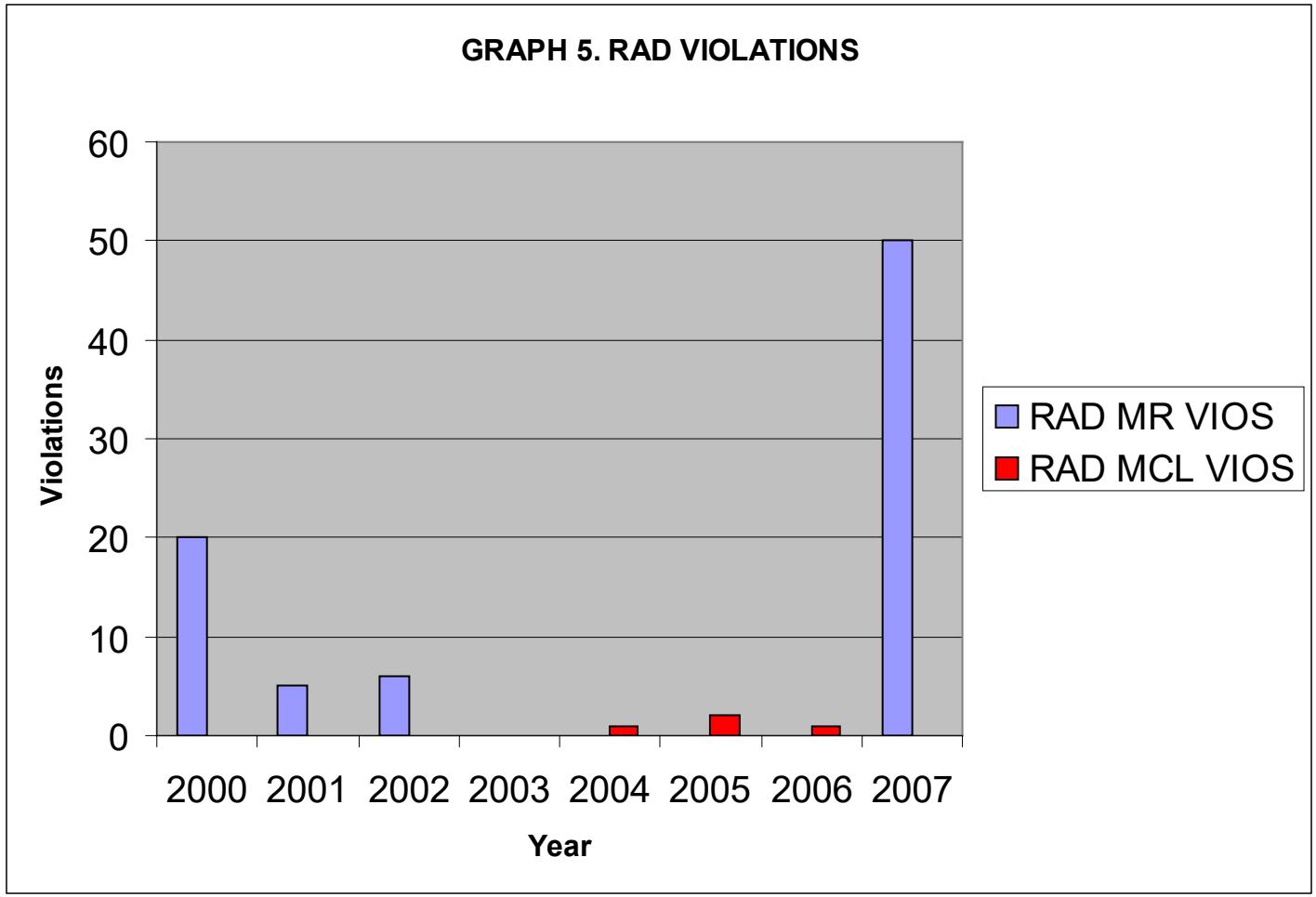
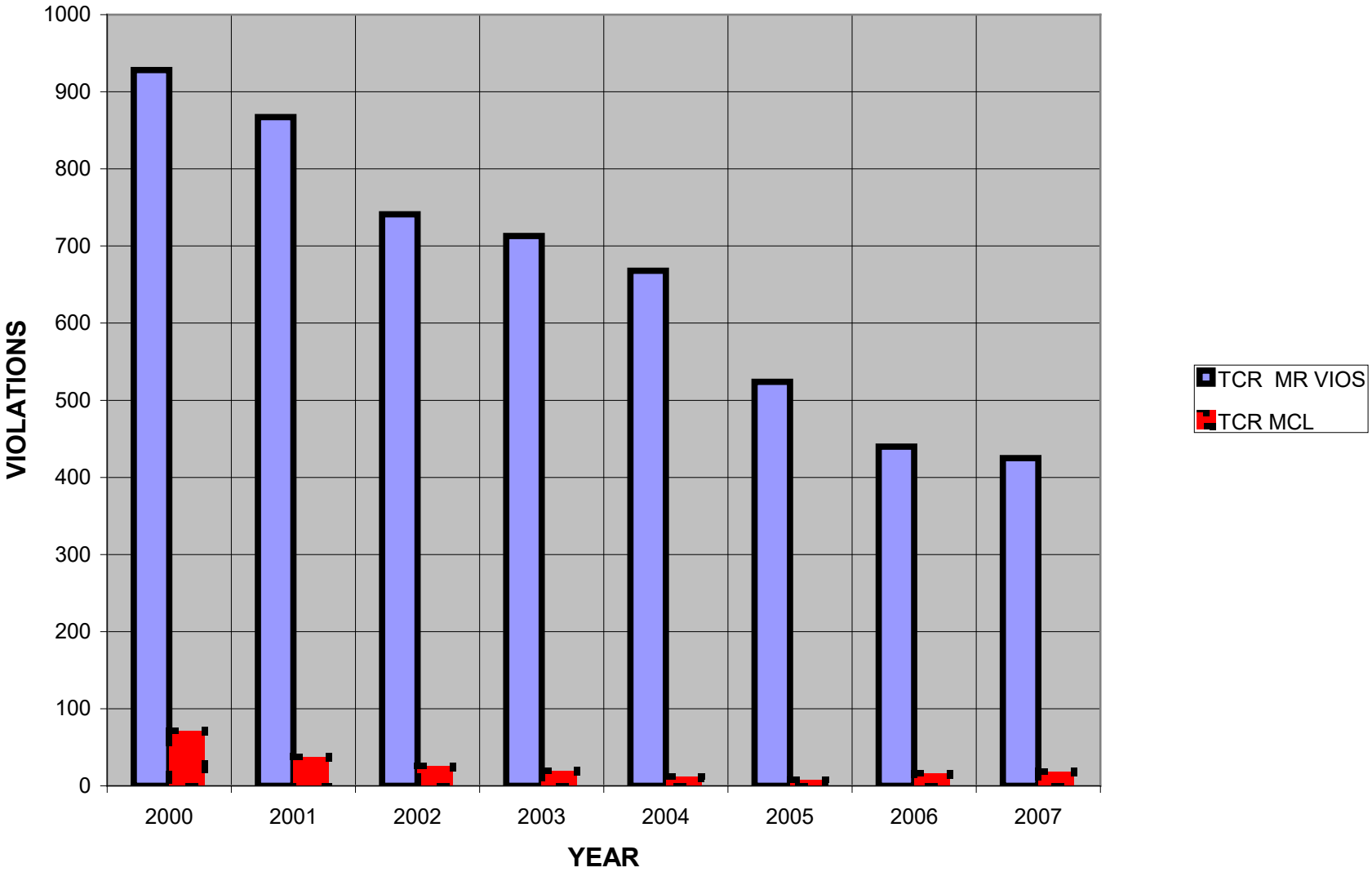

GRAPH 5. RAD VIOLATIONS
60
50
40
30
20
10
0
Violations
2000
2001
2002
2003
2004
2005
2006
2007
Year
RAD MR VIOS
RAD MCL VIOS

GRAPH 6. WV TCR VIOLATIONS



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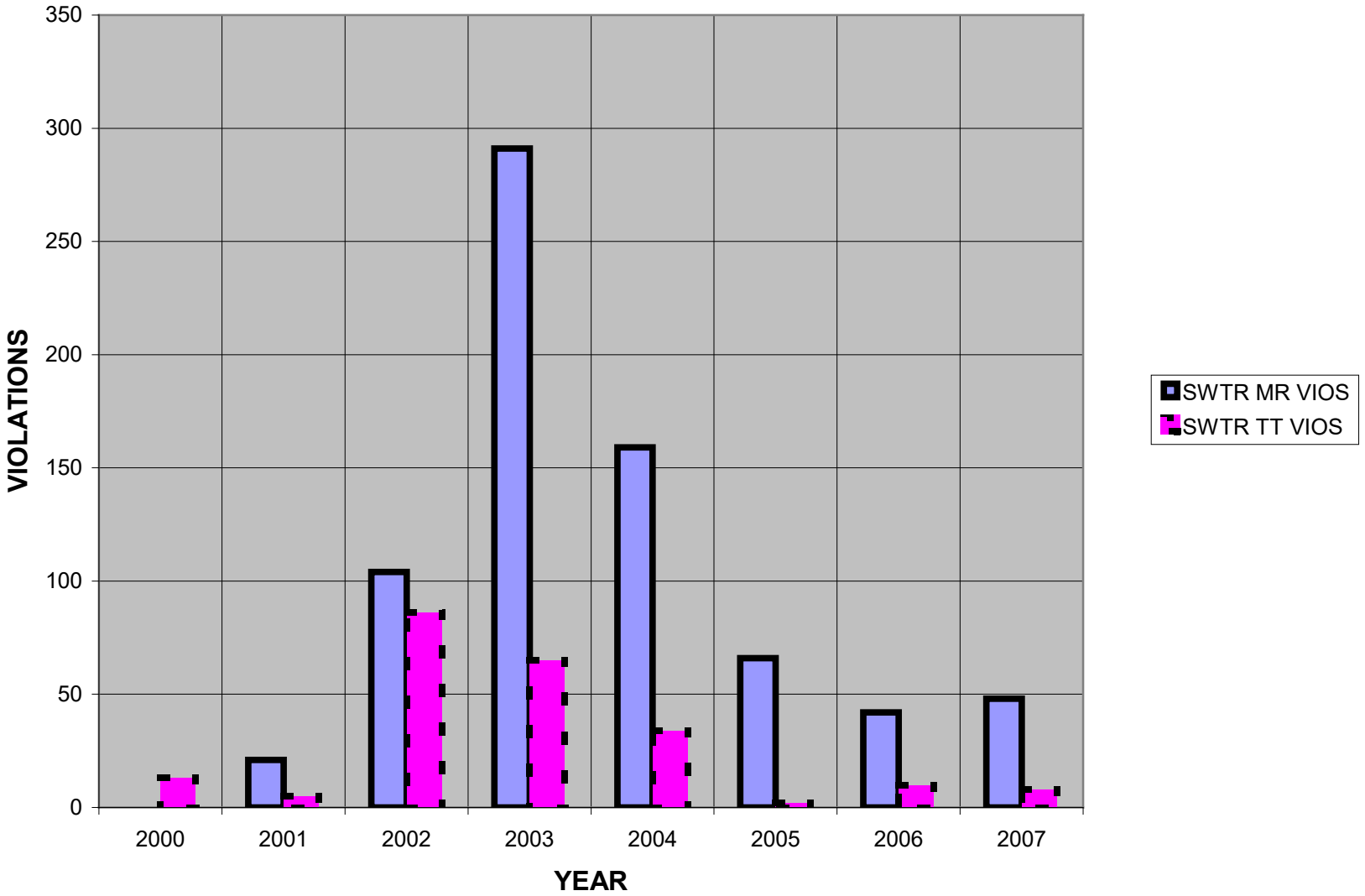
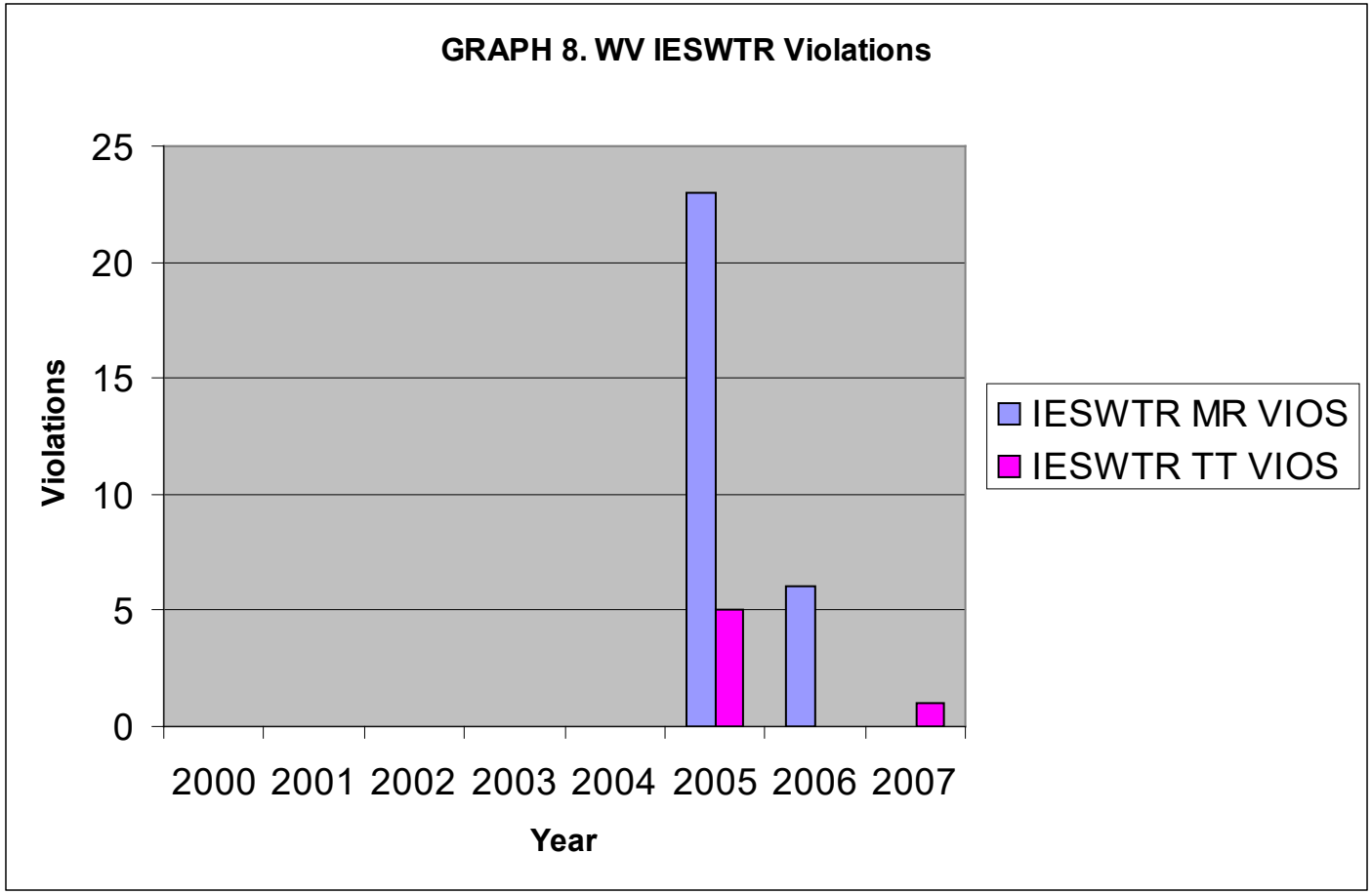
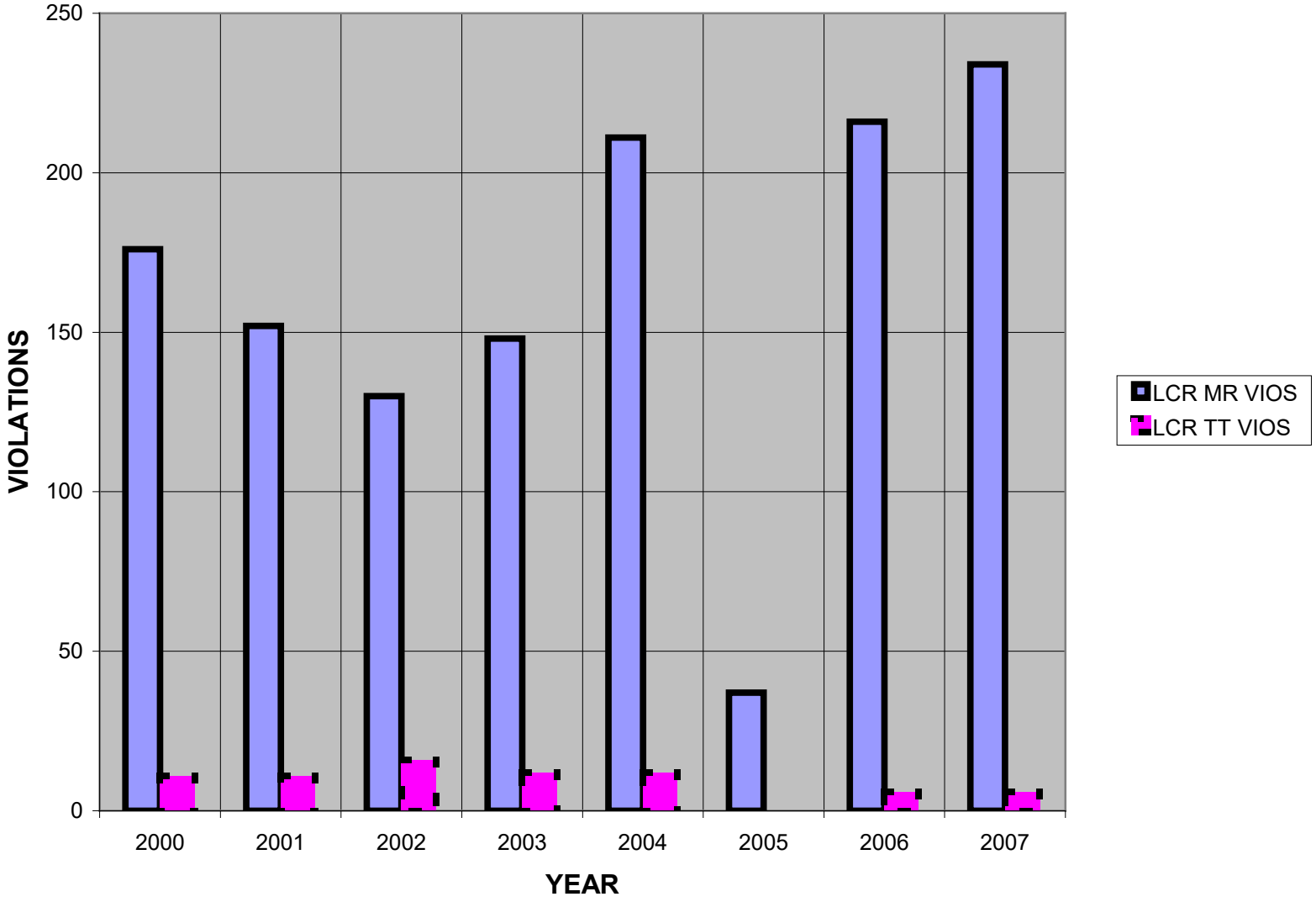
GRAPH 7. WV SWTR VIOLATIONS

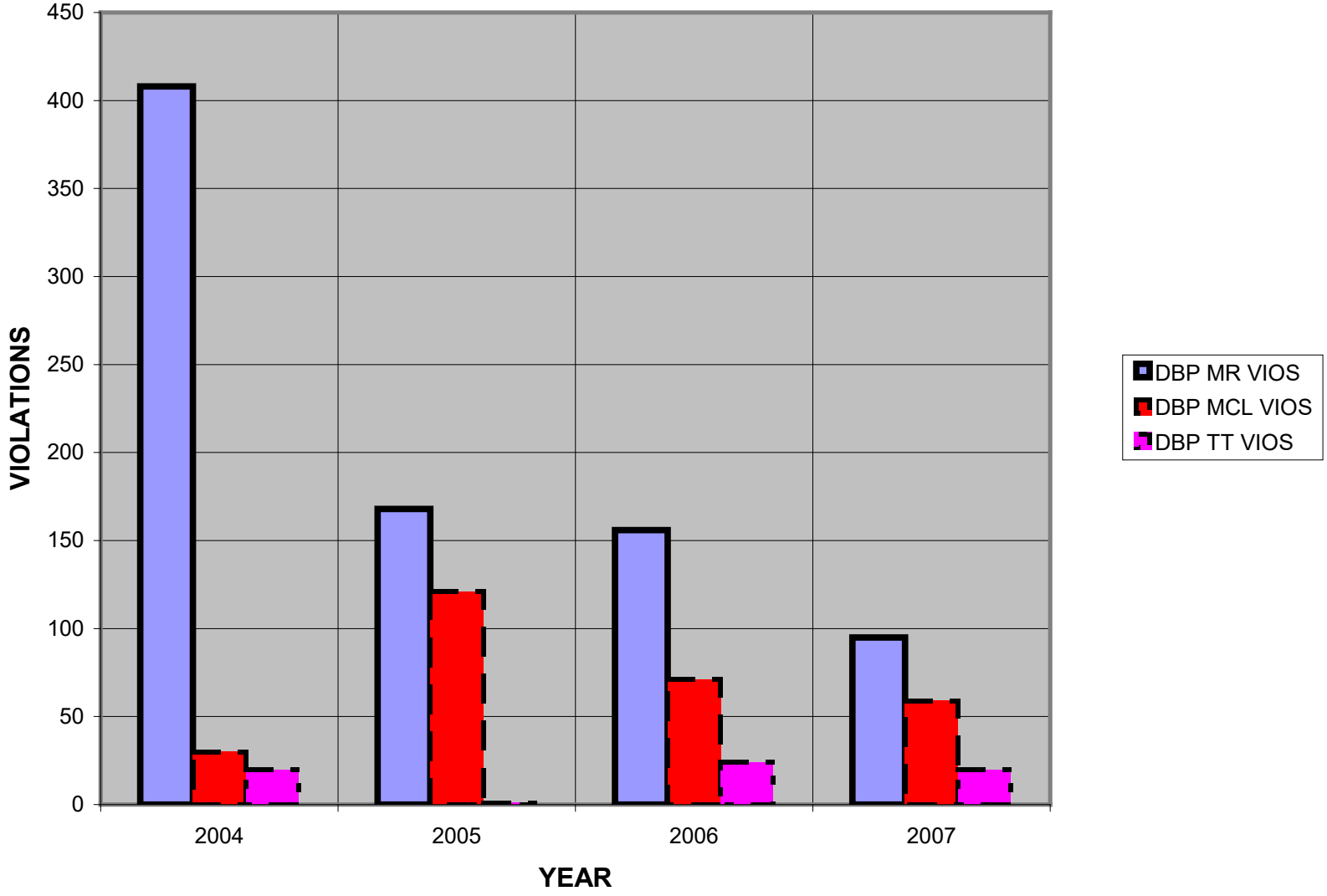



GRAPH 8. WV IESWTR Violations
25
20
15
10
5
0
Violations
2000 2001 2002 2003 2004 2005 2006 2007
Year
IESWTR MR VIOS
IESWTR TT VIOS

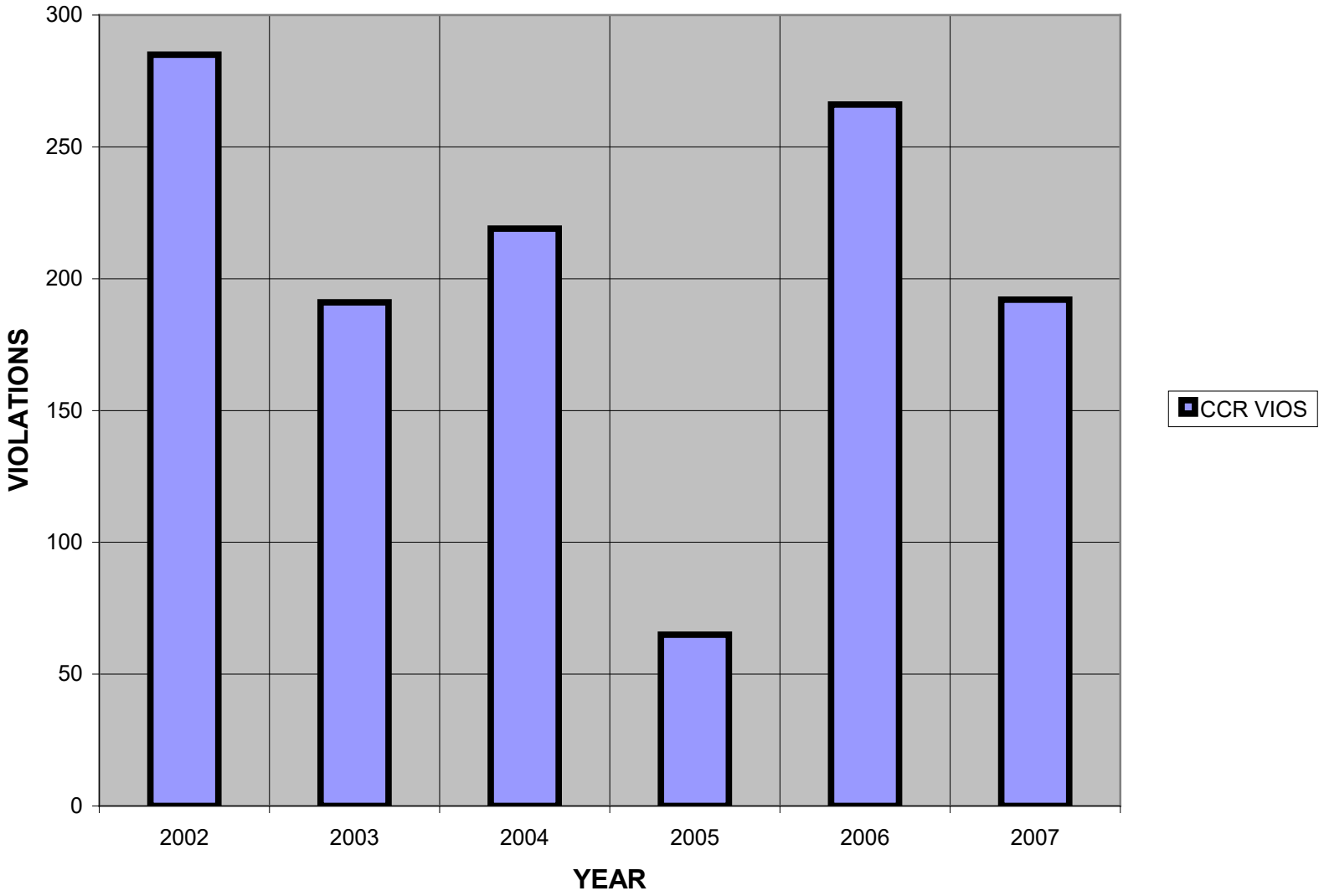
GRAPH 9. WV LCR VIOLATIONS



GRAPH 10. WV DBP VIOLATIONS



GRAPH 11. WV CCR VIOLATIONS



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